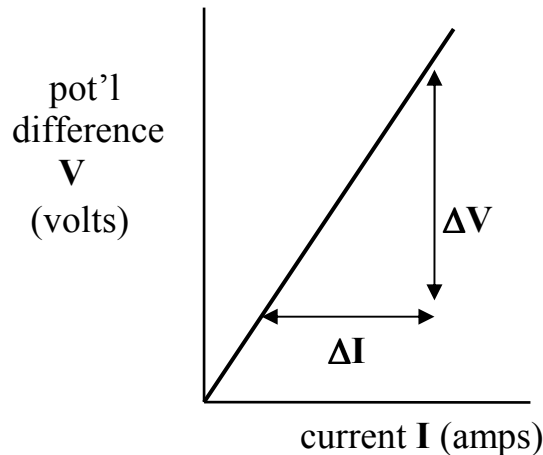


## Ohm's Law

This famous formula results from attempts to find a math relationship relating potential difference to current flow.

Recall the Ohm's Law lab from physics 11. In it, you are to apply different voltages across a given resistor and measure the changing current flow.

Graphing **V vs. I** we get the graph that follows:



The straight line through the origin expresses a direct relationship, so long as the resistor does not significantly overheat. From  $y = kx + b$  we get

$$V = kI$$

By definition, this constant slope represents the resistance **R** of the circuit element and is measured in **ohms ( $\Omega$ )**, so that

$$V = IR$$

Note that resistance stays constant only for one temperature; changing temperature changes resistance.

**Example #6: A small light bulb is connected to 3.0 V and will draw 150 mA.**

- (a) What is the net resistance of the bulb?**
- (b) If the voltage dropped to 2.0 V, how would the current change?**

**(see Circuitry Ex 6 for answer)**